

①

# Selectives properties of X-ray

Ch, 1

Short wave Length

Selective Penetration and absorption Power

Produce Image

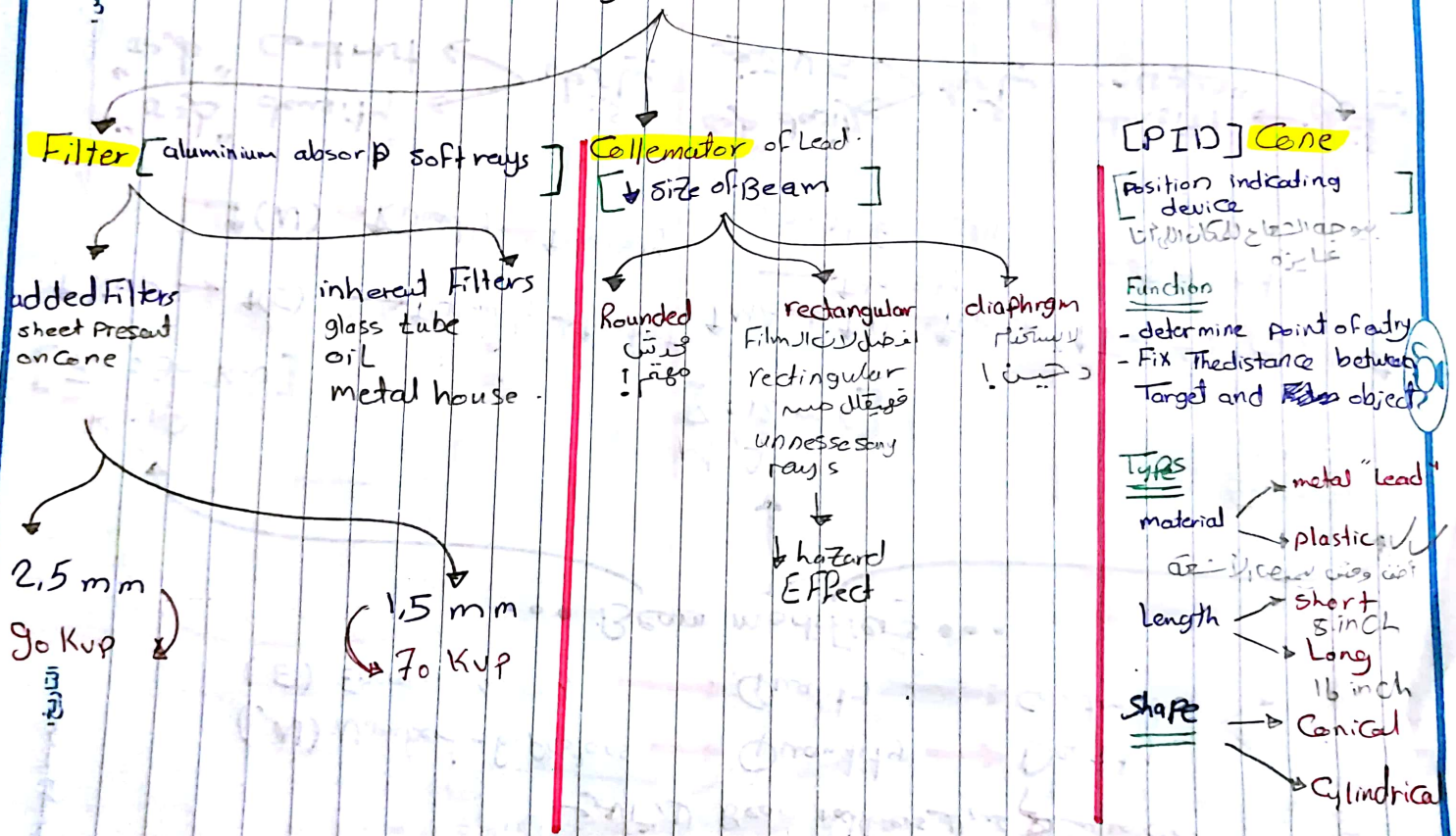
Produce Light on Fluorescence Screen

have a damage Effect

التاريخ

موضوع الدرس

# ... Accessories of X-ray machine ...



قبل ما نتكلم عنه Beam modifiers لاش تعرف

(N) Number of Photons → Quantity → Density  
(E) Energy → " → Quality → Contrast

... Beam modifiers ...

KVP  
[70 : 90 K-V]

↑ KVP → ↑ (E) → ↑ Quality → ↑ Contrast  
          ↓  
          ↑ (N) → ↑ Quantity → ↑ Density

density ← "طردى"  
Contrast ← "طردى"

MA  
[8 : 12 mA]

↑ MA → ↑ N → ↑ Quantity  
          ↓  
          ↑ Density  
          E لا تتغير

density ← "طردى"  
E لا تتغير ← "بياتر فاه"

Exposure Time

↑ Time → ↑ N → ↑ Quantity  
          ↓  
          ↑ Density

density ← "طردى"  
"بياتر فاه" ←



①

# ... Image characteristics ...

Visual

Geometric [جسدية / بصرية]

Density

Contrast

Parameters

object Thickness

distance

Filters & Collimators

Processing

KVP

object Thickness and density

Scattered radiation (or) grey radiation

Filtration and Collimation

KVP  
MA  
Exposure time

↑ Thickness  
↓ density

↑ distance  
↓ density  
 $I \propto \frac{1}{d^2}$

over Collimation  
↓ density  
[Faint Image]  
over Filtration  
↓ density  
[Faint image]

different thickness  
↓ Contrast

↑ radiation  
↓ Contrast  
[Fogged Image]

under filtration  
↓  
Poor Contrast  
\* ~ \*  
under Collimation  
↓  
Poor Contrast

موضوع الدرس :

# • • • Geometric Characteristics • • • [ Sharpness ]

Ch :

## Focal Spot "Target" size

↓ size → ↑ Sharpness  
So Target is Beveled



effective Focal Spot  
1cm

actual Focal Spot  
3cm

## Distance

↑ Target object distance

↓ sharpness  
بقلة انتشار الأشعة  
27 rays

↑ object Film distance

↓ sharpness

## movement of "film - object - curm"

↳ Blurred Image .

## Binumbra

هذا هو المجال الضبابي  
الذي يحدث عند حواف الصورة  
عندما تكون حادة في الوسط  
وقبلية الخلفية



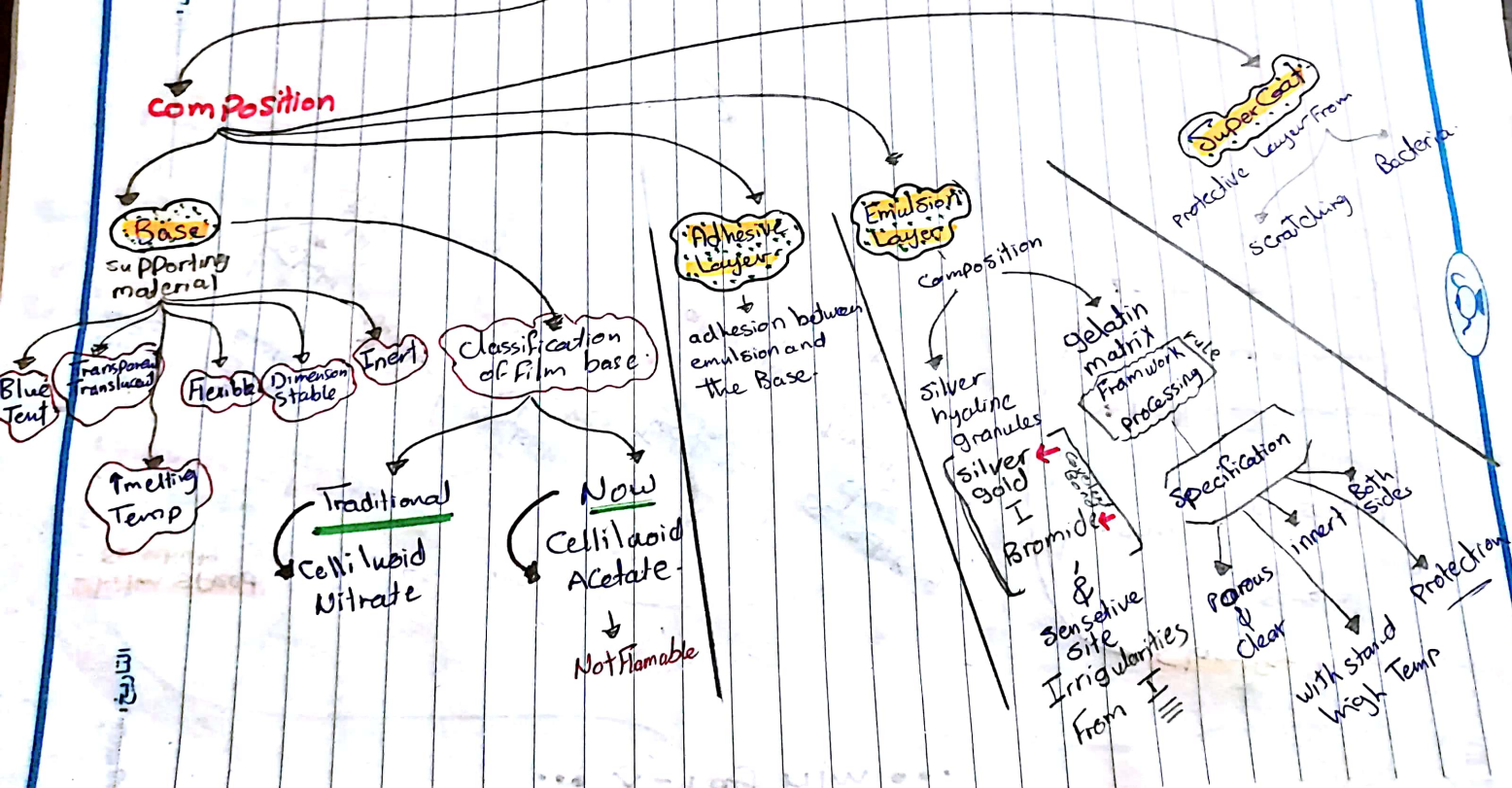
التاريخ :



# ... X-ray Film ...

1

## Composition



... X-ray film ...

2

Packet

Intraoral Films

Extraoral Films

Present at the Cassette

Front

Back

Intensifying Screen

Fluorescent

Foam

Plastic

Lead

Fluorescent

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Cover (Plastic + Carton (x) because of Saliva)

Front Surface Toward The tooth.

[Tube Side] Back Side

- Smooth side of open -

Lead Foil absorb X-rays, make it rigid, Scattered radiation

Two black Papers Protect it From sudden Light

Front Plastic, Back Lead

Intensifying Screen Fluorescent

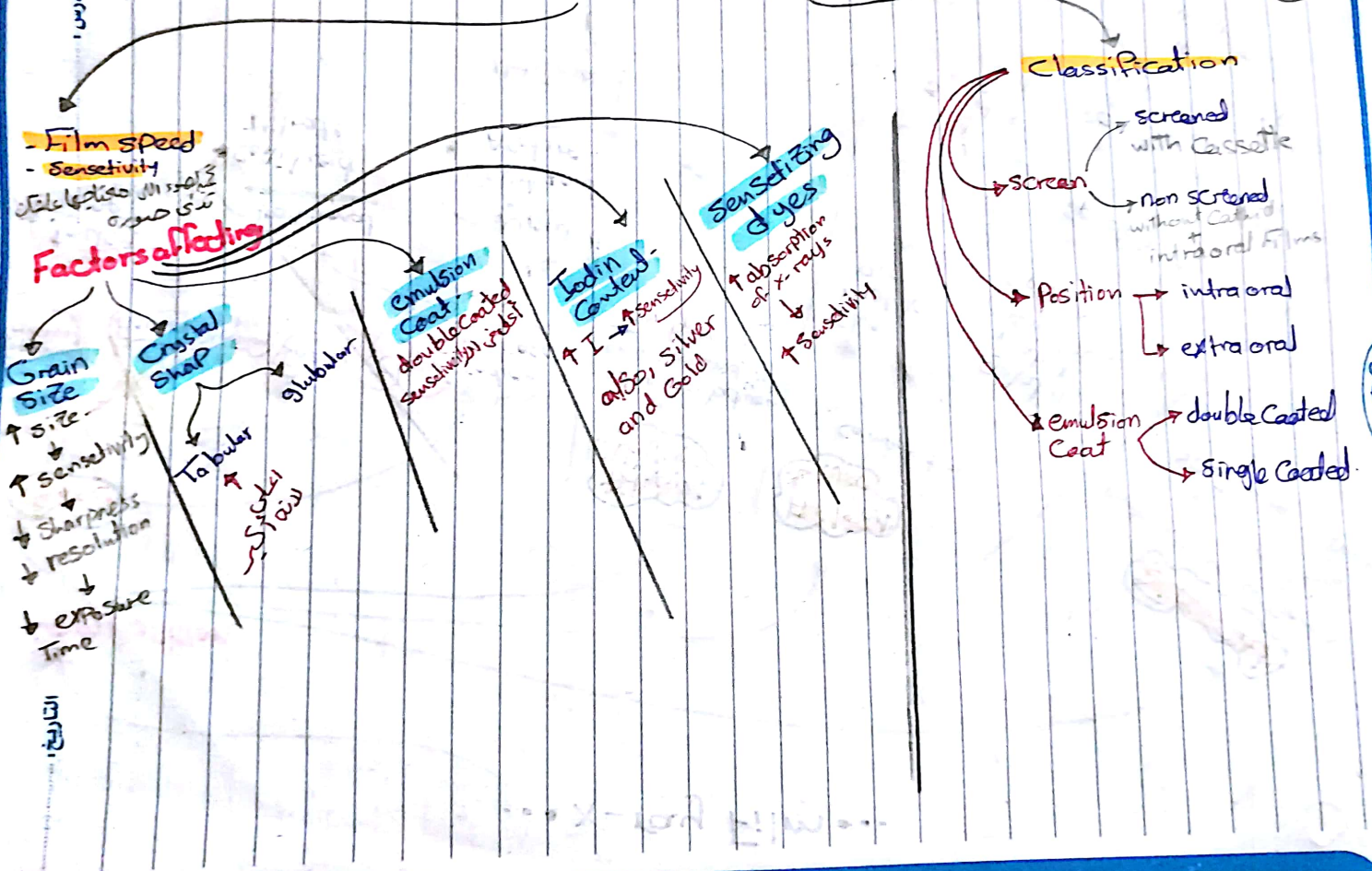
Foam To make it rigid, Conduct to divergence

Fluorescent (2), Protective Coate (1), Base (4), reflecting layer (3)

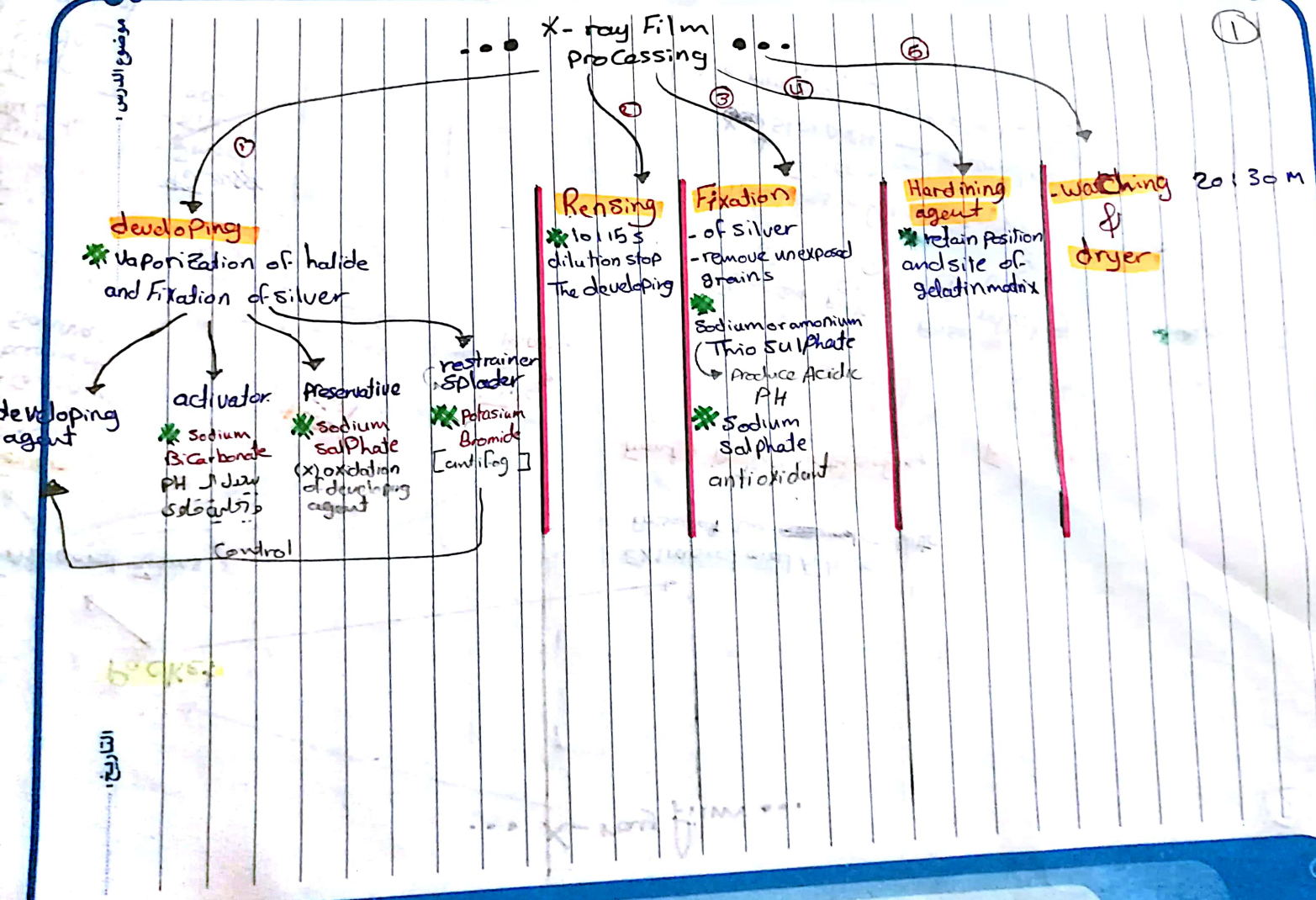
Problems of intensifying Screen: sharpness, but extra oral is more sharpness than intraoral



# ... X-ray Film ...







## ... ways of processing ...

Conventional "manual"

Fixed Time  
and Temp  
method

Processing  
Box

"speed" Fast processing

Self processing  
Films

packet is attached  
to the film packet

Digital  
Processing

Automatic processing  
machine

high conc of solution

no rinsing

regular replenishing

Bad quality because  
loss of rinsing  
step.



## ... Radiation ...

Intraoral

Extraoral

Periapical

Fracture - Caries - impacted Teeth

Bite wing

Recurrent Caries - stone in pulp  
PDL disease - overhang margin

Occlusal

Large lesion  
- Buccolingual Lesion

Parallel Technique

- Axis of tooth // Film

- Central rays ⊥ axis of tooth

Bisecting Technique

- Film in contact with incisal edge

- Central rays ⊥ Bisecting Line

Factors affecting

Patient

Film

Center rays

Maxillary

looks Forward

mandibular

Slight Backward

Anterior

vertical

Posterior

horizontal

position

2:3 above

incisal edge

1:2 above

occlusal plane

point of entry

upper

lower

Horizontal axis

mesiodistal dimension

لازم يكون

X-ray // interdental space

vertical axis

1/2 → 55:60

3 → 50:45

5 كل حجرة

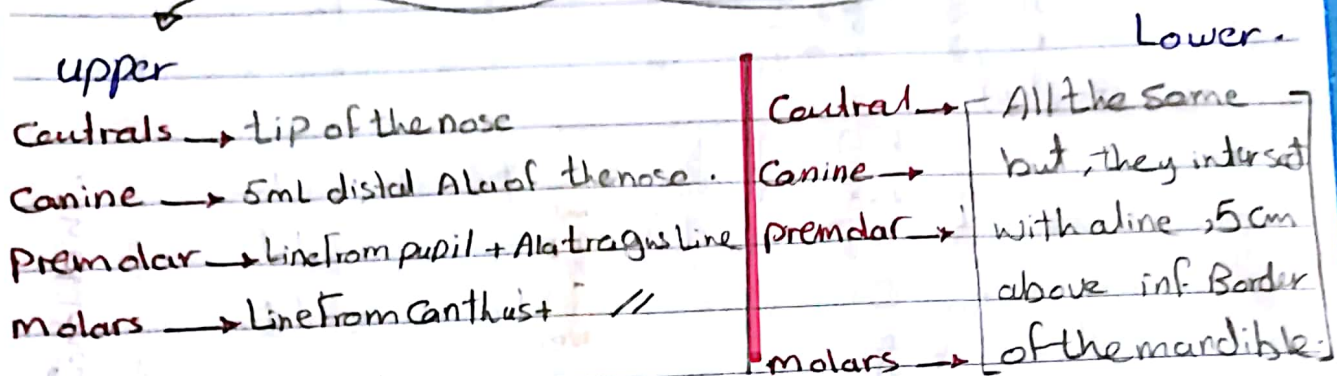
1/2 → 25:2

3 → 20:15

كل 5 كل حجرة



## point of entry



## \* ... Bite wing Tech ... \*

Show crown and  $\frac{1}{3}$  or  $\frac{2}{3}$  of the root of upper and lower.

## Technique adjustment

Patient  
at upright  
position

## Film

Size 3 → 1 For molars and premolars

Size 2 → 1 For molars  
§ 1 For Premolar

intimate contact

## Central rays

Vertical angulation

horizontal angulation

Point of entry

Peri apical

sharpness

Parallism

advantages of  
Bite wing Tech

# ... occlusal Films ...

## maxillary

### Topographic

#### anterior From canine to canine.

→ Patient → at upright position

→ Film → The front of film toward maxilla.

→ Central rays →  
→ Horizontal // to mid sagittal  
→ Vertical "65 +ve"

#### Posterior From canine at on side.

→ Patient: and is  
Film: Ant of

Central rays  
→ Horizontal 45°  
→ Vertical 55°

Has hazarded effect may reach the Brain and eye

من  
الأسفل  
الأسفل  
الأسفل  
Cassette

### Cross section

## mandibular

### Topographic

#### anterior

Central rays  
→ Horizontal → 60°  
→ Vertical → 0°  
Parallel to mid-sagittal plane

#### Posterior

Central rays  
From angle of the mandible  
on the film.

### Cross section

حالة الجنين  
X-ray ⊥ Film





## ملحوظات رايقة :

## Type of Final image :

- 1) diagnostic image → صورة رايقة احسنها معلومات
- 2) Faint image → صورة ال density يتاها قليلة
- 3) Fogged image → صورة خبابية مشوهة من Radiation
- 4) Dark image → صورة ال density يتاها عالية
- 5) Blank image → unexposed Film + processing error
- 5) Blurred image → صورة يتكون لو "objed, Film, Arm" الحركما اثناء التصوير

